

## EXHAUST TREATMENT DEVICE

### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention.

The present invention relates to the general art of  
5 automotive vehicles, and to the particular field of exhaust  
treatment devices for automotive vehicles.

#### 2. Discussion of the Related Art.

As more and more automotive vehicles are found on the  
roads, air pollution becomes a greater problem. In many  
10 areas, very strict emission limits are placed on automotive  
vehicles. This has led to the development of alternative  
energy source vehicles, and the like. However, many of these  
solutions are not yet practical and are not yet fully  
commercially viable for many consumers.

15 Therefore, there is a need for an exhaust treatment  
device that can be used on presently-available automotive  
vehicles.

While exhaust gas treatment devices are well known in  
the art, most of these devices are located in the exhaust  
20 system and therefore must be installed by a skilled

technician with the proper tools and equipment. This can be expensive and onerous for a vehicle owner.

Therefore, there is a need for an exhaust treatment device that can be easily installed on presently-available automotive vehicles.

Once installed, an exhaust treatment device should be cleaned or changed on a periodic basis. With presently-available devices, such maintenance may be difficult and/or expensive due to the location of the devices. This discourages automobile owners from carrying out proper maintenance of the exhaust treatment devices.

Therefore, there is a need for an exhaust treatment device for use on an automobile that can be easily maintained.

#### PRINCIPAL OBJECTS OF THE INVENTION

It is a main object of the present invention to provide an exhaust treatment device that can be used on presently-available automotive vehicles.

It is another object of the present invention to provide an exhaust treatment device that can be easily installed on presently-available automotive vehicles.

It is another object of the present invention to provide an exhaust treatment device for use on an automobile that can be easily maintained.

## SUMMARY OF THE INVENTION

These, and other, objects are achieved by an exhaust treatment device that is adapted to be releasably attached to the exhaust end of an exhaust pipe of an automobile. The device includes a proximal end that has clamps that securely grip the exhaust pipe and a cylindrical filter medium that can be easily removed and replaced inside the device.

Exhaust from the engine, even exhaust that has already been treated by other exhaust treatment devices associated with the engine, is further treated by the device of the present invention before the exhaust is emitted to the environment. This further aids in maintaining a clean environment.

Using the exhaust treatment device embodying the present invention will permit an existing vehicle to be retrofit to improve emissions associated with the vehicle. The device embodying the present invention can be easily installed on the exhaust end of an exhaust pipe associated with an automobile engine and thus is easy to install, even by a non-skilled person who does not have access to special equipment. Once installed, the device of the present invention is easily maintained and the filter media can be easily replaced without the need of special skills or special equipment.

## BRIEF DESCRIPTION OF THE DRAWING FIGURES

Figure 1 is a side elevational view of an exhaust treatment device embodying the present invention.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

5 Other objects, features and advantages of the invention will become apparent from a consideration of the following detailed description and the accompanying drawings.

Referring to the Figure, it can be understood that the present invention is embodied in an exhaust treatment device  
10 that will treat gases exhausted from an automotive vehicle and which is used in addition to any other exhaust treatment device used on the automotive vehicle. Exhaust treatment device 10 comprises a tailpipe 12 of an automotive vehicle V. Tailpipe 12 includes an exhaust end 16 and is  
15 fluidically connected to another exhaust treatment device, such as a catalytic converter 20 or the like, that is fluidically interposed between the engine of vehicle V and exhaust end 16 of the tailpipe 12.

Treatment device 10 further includes a filter unit 30  
20 releasably mounted on the tailpipe 12 adjacent to the exhaust end 16 of the tailpipe 12. Filter unit 30 includes a cylindrical housing 32, which can be stainless steel, aluminum or any other suitable material. Housing 32 has a first end 34 which is a proximal end when the filter unit 30  
25 is mounted on the tailpipe 12, a second end 36 which is a

distal end when the filter unit 30 is mounted on the tailpipe 12, and a longitudinal axis 38 which extends between the first end 34 of the cylindrical housing 32 and the second end 36 of the cylindrical housing 32.

5           A bore 40 is defined through the cylindrical housing 32 in the direction of the longitudinal axis 38 and extends between the first end 34 of the cylindrical housing 32 and the second end 36 of the cylindrical housing 32. An internal surface 42 is located on the cylindrical housing 32 adjacent  
10       to the bore 40 and an outside surface 44 on the cylindrical housing 32.

          A plurality of exhaust holes 46 are defined through the cylindrical housing 32 and are located adjacent to the second end 36 of the cylindrical housing 32.

15           A clamp unit 50 is located on the first end 34 of the cylindrical housing 32. The clamp unit 50 is sized and adapted to securely clamp the tailpipe 12 adjacent to the exhaust end 16 of the tailpipe 12 to mount the filter unit 30 onto the tailpipe 12 adjacent to the exhaust end 16 of  
20       the tailpipe 12. The exhaust end 16 of the tailpipe 12 is located inside the bore 40 of the cylindrical housing 32 when the filter unit 30 is mounted on the tailpipe 12.

          Filter media 60 is located in the bore 40 of the cylindrical housing 32 between the first end 34 of the  
25       cylindrical housing 32 and the second end 36 of the cylindrical housing 32. The filter media 60 is adapted to

treat exhaust from the tailpipe 12 and is located to be in fluid communication with the exhaust end 16 of the tailpipe 12 and with the exhaust holes 46 defined in the cylindrical housing 32 when the filter unit 30 is mounted on the tail pipe 12. Filter media 60 is of the type found in exhaust treatment devices, and thus will not be specifically discussed.

Any fluids being exhausted from the tailpipe 12 are thus further treated by device 10 to further aid in maintaining a clean environment. Device 10 is easily removed from the tailpipe 12 by simply releasing clamp unit 50. The housing 32 is easily opened, as by unscrewing one end thereof, the filter media 60 removed and replaced with a fresh media 60, the housing 32 re-closed and then replaced on the tailpipe 12. In this manner, fresh and effective filter media 60 are always available for device 10 and are easily placed in the device 10.

It is understood that while certain forms of the present invention have been illustrated and described herein, it is not to be limited to the specific forms or arrangements of parts described and shown.